Abstract

Method for operating a nitrogen oxide storage-type catalytic converter of an internal combustion engine, particularly of a motor vehicle

The invention relates to a process for operating a nitrogen oxide storage-type catalytic converter of an internal combustion engine, particularly of a motor vehicle, in which the nitrogen oxides which have been produced by the internal combustion engine are stored in the storage catalytic converter in the first operating phase (lean phase) as a storage phase for a specific storage time, and in which, after expiration of the storage time at a specific switching instant for a specific discharge time, switching to the second operating phase as the discharge phase takes place, in which the nitrogen oxides which were stored during the storage time are discharged from the storage catalytic converter, the switching instant in the storage phase being determined as a function of the nitrogen oxide slip as the difference between the nitrogen oxide mass flow which has flowed into the storage catalytic converter and the nitrogen oxide mass flow which has flowed out of the nitrogen oxide storage catalytic converter, each relative to the storage time. As claimed in the invention, to establish the switching instant from the storage phase to the discharge phase, the relative nitrogen oxide slip is determined such that the nitrogen oxide mass flow upstream of the nitrogen oxide storage catalytic converter and the nitrogen oxide mass flow downstream of the nitrogen oxide storage catalytic converter are each integrated over the time interval of the lean phase and the quotient of the integral values are brought into a relative relationship with a definable degree of conversion of the nitrogen oxide which can be derived from the exhaust gas boundary value, such that when this predetermined switching condition is present, switching from the storage phase to the discharge phase is carried out. In this way the fuel consumption can be reduced especially for a new storage catalytic converter using the full storage potential.

FIG. 3

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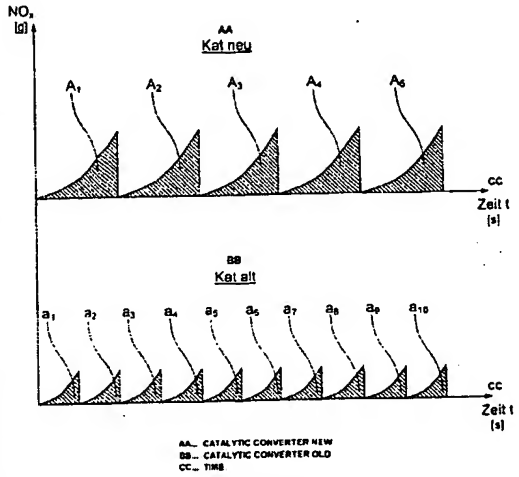
[continued on next page]

(54) Title: METHOD FOR OPERATING A NITROGEN OXIDE STORAGE-TYPE CATALYTIC CONVERTER OF AN INTERNAL COMBUSTION ENGINE, PARTICULARLY OF A MOTOR VEHICLE



(57) Abstract: The invention relates to a method for operating a nitrogen oxide storage-type catalytic converter of an internal combustion engine, particularly of a motor vehicle, according to which nitrogen oxides produced by the internal combustion engine are stored for a specified storage time inside the storage-type catalytic converter during a lean phase that is denoted as a storage phase, and once the storage time elapses, a discharge phase is switched to at a specified switch-over instant for a specified discharge time. The switch-over instant in the storage phase is, each time with regard to the storage time, determined according to a nitrogen oxide leakage serving as the difference between the nitrogen oxide mass flow flowing into the storage-type catalytic converter and the nitrogen oxide mass flow flowing out of the nitrogen oxide storage-type catalytic converter. According to the invention, a relative nitrogen oxide leakage is determined in order to establish the switch-over instant from the storage phase to the discharge phase, whereby the nitrogen oxide mass flow upstream from the storage-type catalytic converter and the nitrogen oxide mass flow downstream from the storage-type catalytic converter are integrated each time over the duration of a lean phase, and the quotient of the integral values are relatively correlated with a predeterminable nitrogen oxide degree of conversion, which can be derived from an exhaust gas limit value, whereby in the existence of this predetermined switch-over condition, the switch-over from the storage phase to the discharge phase is effected at the switch-over instant.

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